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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/560,804

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Jawad Haidar

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EXAMINER

ZHU, WEIPING

ART UNIT

PAPER NUMBER

1793

MAIL DATE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/560,804	Applicant(s) HAIDAR, JAWAD	
	Examiner WEIPING ZHU	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 and 45-63 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-40 and 45-63 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 1st, 2009 has been entered.

Status of Claims

2. Claims 1-40 and 45-63 are currently under examination wherein no claim has been amended in applicant's amendment filed on May 1, 2009. The two 1.132 declarations signed by Mr. Jawad Haidar, the only named inventor of the instant application, and Mr. Anthony B. Murphy respectively and filed on May 1, 2009 are acknowledged.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-7, 11-40 and 45-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nie et al. (US Pub, 2004/0050208 A1).

With respect to claims 1, 27, 29, 31, 33 and 34, Nie et al. ('208 A1) discloses a method to produce titanium-aluminum compounds comprising (paragraphs [0025]-[0096]) a first step of reducing an amount of titanium chloride (TiCl_4) with an amount of aluminum to trigger first reaction at temperature of less than 130°C to greater than 660°C to form Ti powder, aluminum chloride (AlCl_3) in solid or vapor form, unreacted TiCl_4 and first reaction products that will need to be treated or further processed (e.g. titanium subchlorides as claimed) (paragraphs [0044] and [0059]); and then a second step of mixing the products of the first step and Al and heating the mixture in a reaction zone to a temperature above 660°C (e.g. 700°C) (paragraph [0072]) to produce in the reaction zone of the titanium-aluminum compounds and/or titanium-aluminum alloys. Nie et al. ('208 A1) does not specify the titanium subchlorides as claimed. However, the first reaction products that will need to be treated or further processed as disclosed by Nie et al. ('208 A1) read on the claimed titanium subchlorides because of the similarities of the reactants and the process conditions between the instant invention and Nie et al. ('208 A1). Nie et al. ('208 A1) discloses reducing an amount of titanium chloride (TiCl_4) with hydrogen in an inert gas atmosphere as claimed in instant claim 29 (paragraph [0077]) without specifying heating an amount of titanium chloride (TiCl_4) in a plasma of an inert gas and hydrogen mixture as claimed in instant claim 27. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to heat an amount of titanium chloride (TiCl_4) in a plasma of an inert gas and hydrogen mixture as recited in instant claim 27 in the process of Nie et al. ('208 A1) in order to change the thermodynamics of the elemental Ti formation as

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disclosed by Nie et al. ('208 A1) (paragraph [0007]). The temperatures of the first and second steps overlap the claimed temperature ranges respectively, and therefore a prima facie case of obviousness exists. See MPEP 2144.05 I.

With respect to claims 2, 3, 28, 30, 32 and 35, Nie et al. ('208 A1) discloses that the chloride of the reducing agent is constantly removed from the reaction zone as claimed (paragraph [0081]).

With respect to claims 4, 46, 49, 52, 56, 5, 47, 50, 53 and 57, Nie et al. ('208 A1) discloses the first step is conducted in a temperature range of less than 130 °C to greater than 660 °C (paragraph [0059]), which overlaps the claimed ranges.

With respect to claims 6, 54 and 58, Nie et al. ('208 A1) discloses the first step is conducted with an excess amount of the reducing metal (paragraph [0038]).

With respect to claims 7, 48, 51, 55 and 59, Nie et al. ('208 A1) discloses the second step is conducted in a temperature range of up to greater than 660° C (paragraph [0072]), which overlaps the claimed ranges.

With respect to claims 11-13, Nie et al. ('208 A1) discloses condensing AlCl_3 , the unreacted TiCl_4 and first reaction products that will need to be treated or further processed away from the reaction zone at a temperature lower than that in the reaction zone; and returning the condensed titanium chlorides to the reaction zone (paragraph [0058]).

With respect to claims 14-21 and 36-40, Nie et al. ('208 A1) discloses ejecting a source of one or more elements selected from aluminum, vanadium, chromium,

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niobium and zirconium into the reaction zone to form intermetallic compounds as desired (paragraphs [0030], [0070] and [0072]).

With respect to claims 22-24, Nie et al. ('208 A1) discloses that the Al powder has a diameter of 7-15 μm (paragraph [0095]), which overlaps the ranges of less than 50 μm as claimed in the instant claims 22 and 24. The claimed features in the instant claim 23 would be obvious to one of ordinary skill in the art if the Al particles have a diameter greater than 50 μm , because milling has been commonly used to reduce the size of particles.

With respect to claim 25, Nie et al. ('208 A1) discloses the method is conducted in an inert gas atmosphere (paragraph [0080]).

With respect to claim 26, Murphy et al. discloses that the titanium-aluminum intermetallic compounds produced include Al_xTi_y (paragraphs [0095] and [0096]), which reads on the claimed intermetallic compounds.

With respect to claims 45 and 60-63, they are product-by-process claims. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. In the instant case, Nie et al. ('208 A1) discloses metal compounds (paragraphs [0025]-[0096]), which reasonably appear to be only slightly different than the respective claimed products in the product-by-process claims as stated above. A rejection based on section 103 of the status is therefore eminently fair and acceptable. See MPEP 2113.

4. Claims 8-10 and are rejected under 35 U.S.C. 103(a) as being unpatentable over Nie et al. ('208 A1) as applied to claim 1 above and further in view of O'Donnell et al. (US 5,397,375).

With respect to claims 8-10, Nie et al. ('208 A1) does not disclose the claimed features. O'Donnell et al. ('375) discloses using metal fluoride to reduce metal oxide to produce titanium fluoride (TiF_4) (col. 3, lines 44-56), which reads on the claimed features. It would have been obvious to one of ordinary skill in the art at the time the invention was made to reduce titanium oxide by using aluminum chloride to produce TiF_4 and aluminum oxide and electrolyze the aluminum oxide to produce aluminum raw material in the process of Nie et al. ('208 A1) in order to recycle the aluminum chloride as disclosed by O'Donnell et al. ('375) (col. 3, lines 44-56).

Response to Arguments

5. The applicant's arguments filed on May 1st, 2009 have been fully considered but they are moot in light of the new ground of rejections as stated above.

The declarations under 37 CFR 1.132 filed on May 1st, 2009 are sufficient to overcome the rejections of claims 1-7, 11-40 and 45-63 based upon Kametani et al. (US 5,032,176) in view of Murphy et al. ("Equilibrium Calculation of the Reduction of Titanium Tetrachloride by Aluminum and Hydrogen" High Temp. Chem. Processes 3, August 1994, pp. 365-374) and the rejections of 8-10 based on Kametani et al. ('176) in view of Murphy et al. and further in view of O'Donnell et al. (US 5,397,375) as stated in

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the Office action dated January 2nd, 2009. New grounds of rejections have been established as stated above.

Conclusions

6. This Office action is made non-final. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Weiping Zhu whose telephone number is 571-272-6725. The examiner can normally be reached on 8:30-16:30 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/George Wyszomierski/
Primary Examiner
Art Unit 1793

WZ
5/29/2009